(6.4) Solving Quadratic Equations Using a Formula

What we know:

How to find the roots of a quadratic relation by FACTORING

Students will be learning;

To SOLVE quadratics that can NOT be factored

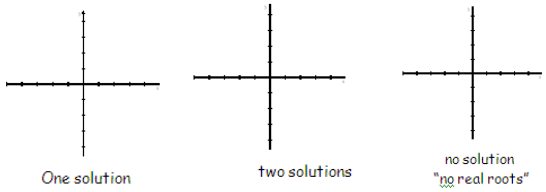
Feb 22-11:43 AM

Solving Quadratic Equations

Factored Form	Standard Form	Vertex Form
Set each factor equal to zero. Solve for the variable.	Factor. Set each factor equal to zero. Solve for the variable.	Convert to standard form & factor. OR *Solve by formula.*

May 13-7:34 AM

(6.4) Solving Quadratic Equations Using a Formula Student Note

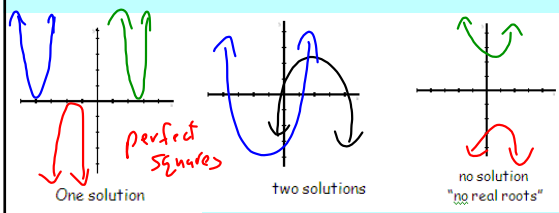


Solution → roots, zeros
→ value of x when y = 0
→ x-intercepts

So far, to find the roots of a quadratic equation we have:
1) Put equation into standard form: $y = ax^2 + bx + c$
2) Rearrange to get 0 = ...
3) FACTOR
4) Set each factor = 0 and solve for the variable
5) OR Put in vertex form (complete the square) and solve by isolation

May 15-12:38 PM

(6.4) Solving Quadratic Equations Using a Formula Student Note



Solution → roots, zeros
→ value of x when y = 0
→ x-intercepts

So far, to find the roots of a quadratic equation we have:
1) Put equation into standard form: $y = ax^2 + bx + c$
2) Rearrange to get 0 = ...
3) FACTOR
4) Set each factor = 0 and solve for the variable
5) OR Put in vertex form (complete the square) and solve by isolation

May 15-12:38 PM

BUT not all quadratic equations can be factored, and if not already in vertex form, then:

1) Put equation into standard form:
2) Rearrange to get 0 = ...

3) Use the **QUADRATIC FORMULA** to solve for x

QUADRATIC FORMULA

Using the Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$a \neq 0$ WHY????

$b^2 - 4ac \geq 0$

a value has to be positive

Quadratic Formula

Example 1: Solve the equation using the quadratic formula...i.e. find the roots.

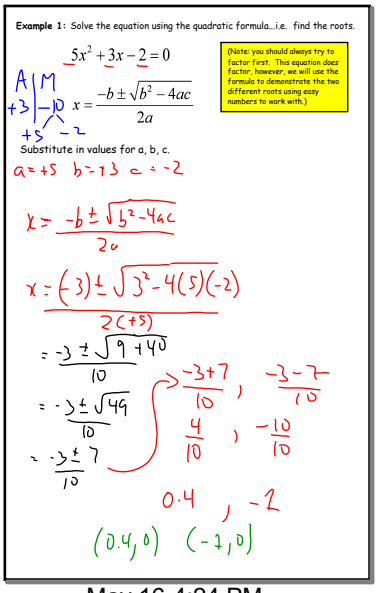
$$5x^2 + 3x - 2 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

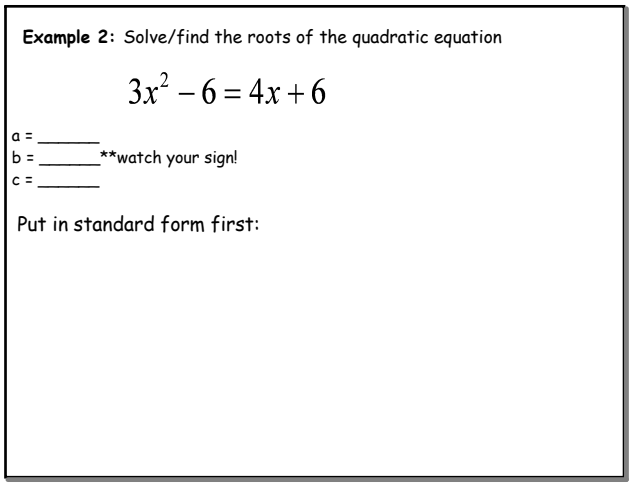
(Note: you should always try to factor first. This equation *does* factor, however, we will use the formula to demonstrate the two different roots using easy numbers to work with.)

Substitute in values for a, b, c.

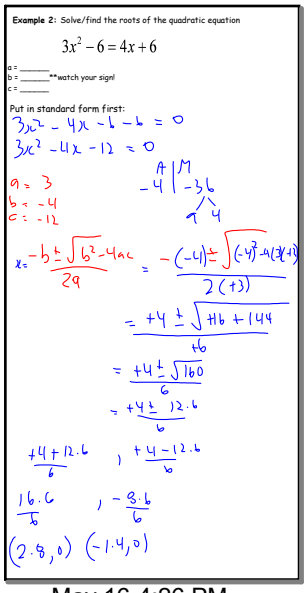
May 16-4:24 PM



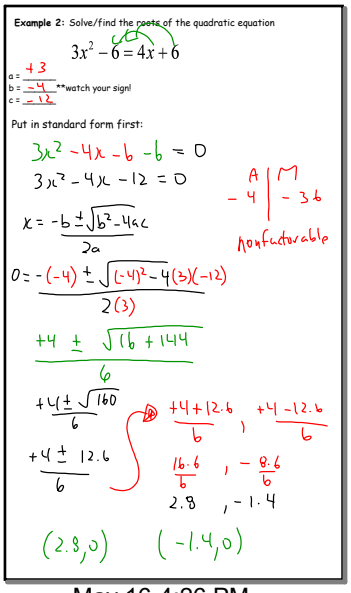
May 16-4:24 PM



May 16-4:26 PM



May 16-4:26 PM

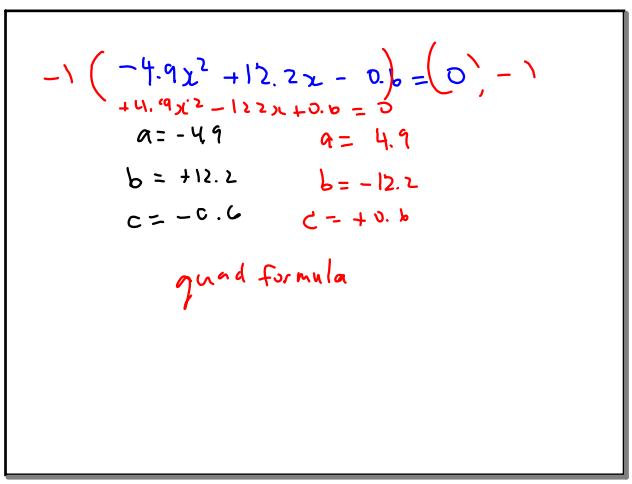


May 16-4:26 PM

Homework

Pg. 342 # 2a, 5ace, 7, 8→9ace, 10acd, 12→14

May 13-7:36 AM



May 14-12:08 PM